BELLSOUTH TELECOMMUNICATIONS, INC.

REBUTTAL TESTIMONY OF WILLIAM H. B. GREER

BEFORE THE PUBLIC SERVICE COMMISSION OF SOUTH CAROLINA

DOCKET NO. 2001-65-C

JUNE 11, 2001

Q. PLEASE STATE YOUR NAME, YOUR BUSINESS ADDRESS, AND YOUR POSITION WITH BELLSOUTH TELECOMMUNICATIONS, INC. ("BELLSOUTH").

A. My name is William H. B. Greer. My business address is 675 West Peachtree Street, Atlanta, Georgia 30375. I am a Staff Manager in BellSouth's Transmission Engineering group in the Network Planning and Provisioning Support organization.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY BEING FILED TODAY?

A. The purpose of my testimony is to respond to the testimony of Dean R. Fassett and Micheal Starkey as filed on behalf of NewSouth Communications, NuVox Communications, Broadslate Networks, ITC^DeltaCom and KMC Telecom (collectively referred to as the "Competitive Coalition"). Specifically, I will address their criticism of various inputs to BellSouth's nonrecurring cost study for unbundled network elements ("UNEs"). I will also respond to James McDaniel's

testimony as filed on behalf of the Utilities Department of the Public Service Commission of South Carolina ("Commission").

Q. WHAT QUALIFICATIONS HAVE YOU ACQUIRED DURING YOUR CAREER THAT POSITION YOU TO TESTIFY ON THE WORK ACTIVITES INVOLVED IN PROVISIONING OF UNEs?

A. I have over twenty years of experience with BellSouth. With the exception of one year, my entire career has been spent in Network as a Transmission Engineer. This position has brought me into contact with many facets of the provisioning processes of the services that BellSouth offers. In addition to spending many of the earlier years of my career assisting the personnel responsible for the activities required to provide the services and UNEs at issue in this proceeding, for the last several years I have worked on teams with many of the same Subject Matter Experts ("SMEs") who provided input to the cost studies for the various UNEs. This experience has provided me with the opportunity to better understand the basis for the SMEs' inputs and to challenge the SMEs when my observations or experience did not correlate with their inputs.

I met with the SMEs to ensure that they understood the specific tasks that were being identified for inclusion in the cost study. As a result of these meetings, I identified several instances where there was a misunderstanding, and my involvement led to reductions being made to the work time estimates in the cost study. One of the work times on which

I had the greatest impact was the reduction of the time shown in the cost study for the Service Advocacy Center ("SAC"), which is the group that actually retrieves the information for a loop makeup.

Q. ON PAGES 8-16, MR. FASSETT CHALLENGES BELLSOUTH'S WORK TIMES FOR PROVISIONING OF xDSL-CAPABLE LOOPS IN THE THREE GENERAL CATEGORIES OF SERVICE INQUIRY, ENGINEERING AND CONNECT AND TEST. PLEASE EXPLAIN THE WORK ACTIVITIES THAT OCCUR IN THESE THREE CATEGORIES.

A. Because I addressed each of the involved work centers and related work activities in detail in my direct testimony, I will provide only a brief overview. Service Inquiry ("SI") determines whether or not facilities are available for the type of loop requested. The Complex Resale Service Group ("CRSG"), the Service Advocacy Center ("SAC") and the Local Carrier Service Center ("LCSC") are the BellSouth work centers that are involved with the SI function. The CRSG is the front-end interface with the CLEC and acts as their advocate within BellSouth. The SAC is the work group in Outside Plant ("OSP") Engineering that determines if facilities are available that will meet the specific requirements of the type of loop that the CLEC is ordering. The LCSC enters the CLEC's request into BellSouth's ordering systems.

Engineering includes the Circuit Provisioning Group ("CPG") and the Address Facility Inventory Group ("AFIG"). These groups only get

involved when an order falls out of the mechanized system and must be handled manually. The CPG gets involved when there are order errors or when the Trunk Inventory Record Keeping System ("TIRKS") is unable to produce an engineering document for some reason, such as the available facilities do not meet the design criteria. The AFIG gets involved when there is fallout in BellSouth's Loop Facilities Assignment & Control System ("LFACS") database because of an assignment error due to the CLEC providing an incorrect connecting facilities assignment ("CFA") or due to a facilities problem in BellSouth's outside plant.

Connect and Test includes work activities performed by Central Office Installation & Maintenance ("COI&M"), Special Services Installation and Maintenance ("SSI&M"), the Work Management Center ("WMC") and the Unbundled Network Element Center ("UNEC"). The COI&M technicians perform physical cross-connections in the central office while SSI&M forces perform the physical cross-connections in the field. The WMC is involved only on a fallout basis when the CO or SSI&M forces need assistance. The UNEC works in conjunction with SSI&M to test the facilities to be sure they meet the requirements of TR7306 and to complete the order with the CLEC.

For each of the UNE offerings, BellSouth's cost study reflects the appropriate involvement by these work groups, as well as the tasks that each group performs. In some cases, Mr. Fassett inappropriately recommends that specific work groups and/or functions be eliminated from

the cost study. In other cases, he arbitrarily reduces the amount of time required to perform the function.

Q. PLEASE ADDRESS THE ADJUSTMENTS THAT MR. FASSETT RECOMMENDS BE MADE TO VARIOUS COST INPUTS IN BELLSOUTH'S NONRECURRING COST STUDY FOR HDSL-CAPABLE LOOPS.

A. On pages 8 through 16, Mr. Fassett suggests that arbitrary and unsupported adjustments should be made to the work times and fallout rates that are used in BellSouth's nonrecurring cost study for HDSL-capable loops. I think it is fair to assume that he recommends these same type of adjustments be made to BellSouth's cost study for the ADSL-capable loop. Therefore, for ease of reference, during this part of my testimony, I will refer to these types of loops as xDSL-capable. As I will discuss in more detail later in my testimony, BellSouth provisions ADSL-capable and HDSL-capable UNE loops as designed circuits.

SERVICE INQUIRY:

Mr. Fassett appears to acknowledge on page 8 that the service inquiry category is not included in BellSouth's cost study for xDSL-capable loops when the CLEC performs its own service inquiry. He accurately states that BellSouth provides loop offerings both with and without loop makeup. He then inappropriately argues that a forward-looking analysis should assume that the CLEC will always obtain the loop makeup electronically.

BellSouth's witness Ron Pate addresses BellSouth's obligation to provide CLECs with access to loop qualification data.

Mr. Fassett incorrectly contends that the CRSG determines the loop makeup and is only involved when the order falls out for manual handling. The Service Inquiry process is 100% manual, and the CRSG is involved on every order. As explained above, the CRSG is the front-end interface with the CLEC and acts as a liaison between the CLEC and the SAC. The CRSG transmits the request for a loop makeup to the SAC, and the engineer in the SAC pulls the manual loop makeup. That is, contrary to Mr. Fassett's contention, the CRSG does not determine the loop makeup.

ENGINEERING:

Regarding engineering inputs, Mr. Fassett arbitrarily reduces the fallout rate for the SAC from 10% to 2%, and he cuts the work time by more than two-thirds. Mr. Fasset appears to base his proposed fallout rate on a network that is not affected by the inherent volatility of a metropolitan area. Furthermore, I am certain he would agree that if the fallout is due to the lack of facilities, an outside plant engineer cannot provide a resolution in the time that he proposes. The inputs used in BellSouth's cost study are reflective of the average time required for this group to handle orders with loop makeups, and a 10% fallout rate is reasonable.

Mr. Fassett also questions the fallout rates for the AFIG and the CPG. Again, these work groups only get involved on orders that fall out for

manual handling. The fallout rates used in BellSouth's cost study for these two work groups are comparable to what BellSouth experiences on similar orders from access and retail customers.

A portion of the fallout that occurs in the AFIG and the CPG is due to the lack of ubiquity of xDSL-capable loops within BellSouth's network. A calculation of the loss characteristics of the loop is first performed during the engineering process. If the calculated loss exceeds the requirements by 0.1dB or more, the order will fall out for manual handling. Similarly, when the UNEC and the SSI&M technician make end-to-end measurements, if all the measured parameters do not meet the requirements, then the AFIG will need to be involved to generate a new assignment.

The other opportunity for these two groups to handle fallout is a result of conflicts that can occur during the ordering process. For example, the AFIG maintains records of the cable pairs that are assigned to CLECs. If the order shows a facilities assignment that LFACS shows is already serving another customer, then the order falls out for manual handling.

The arbitrary reductions in work times and fallout rates that Mr. Fassett recommends for the AFIG reduces BellSouth's average of 2.4 minutes per order to .1 minute (6 seconds). For the CPG, his adjustments reduce BellSouth's average time per order from 4.95 minutes to .5 minutes (30

seconds). He offers no support for his revised numbers except to say they are "much more reasonable."

CONNECT AND TEST:

BellSouth's UNEC provides the CLEC with a point of interface for technical issues that occur in both the provisioning and maintenance of the CLEC's unbundled loop. This center is equivalent to BellSouth's retail residence and business repair centers and to the Access Carrier Advocacy Center ("ACAC") for Interexchange carriers. In other words, the UNEC is the CLEC's advocate within BellSouth to ensure that orders are completed on time and to the CLEC's expectations.

The UNEC utilizes a remote test access system which minimizes the number of personnel needed to complete test functions on designed circuits into which test access points have been wired. Mr. Fassett challenges BellSouth's work times to perform various tests, stating that "a continuity test is one of the most routine, simple and rapid activities in central office operations." He appears to imply that no other tests are necessary – in fact, he questions whether the continuity test is necessary – and he implies that the continuity test can be performed by central office personnel rather than by a UNEC technician.

First, I would note that, in addition to continuity, the structural integrity of the pair must also be determined. Further, for designed xDSL-capable loops, capacitance, resistance and attenuation at 40 KHz is measured to

verify that the loop BellSouth provides to the CLEC meets the specifications of the type of loop that the CLEC ordered. It is physically impossible to make resistance and attenuation measurements "single-ended" (meaning with only one person). These tests are termed "double-ended" because either a person or a test device is needed at both ends of the loop. Mr. Fassett's suggestion that this testing should require only 5 minutes on 2% of the non-designed loops and 5 minutes on 100% of the designed loops is simply erroneous.

Additionally, Mr. Fassett's suggestion that this function be moved from the UNEC to the COI&M implies that the COI&M workload could be easily managed with interruptions to perform these tests whenever an SSI&M technician called in for testing assistance. In fact, it is much more efficient to have the UNEC, whose primary function is to complete CLECs' orders, be responsive to the SSI&M technician's call.

Mr. Fassett recommends that the WMC time per order be cut from 2 minutes to .1 minute (6 seconds), and he refers to his proposal as being "conservative." It should be clear that Mr. Fassett's goal is simply to reduce the rates that his clients must pay BellSouth, because there is absolutely no justification for the substantial reductions in work times and fallout rates that he proposes.

Regarding the COI&M group, Mr. Fassett recommends reducing the work times from 20 minutes per loop to 11 minutes per loop with test points and

8 minutes per loop without test points. It appears that he assumes that the cable pair, the cross-connect appearance of the test points and the CLEC's facilities to its collocation site are all located on the same frame. In fact, the test point requires that two jumpers be connected on an Intermediate Distributing Frame ("IDF"), which is a two-sided frame. There is a third jumper on either a Main Distributing Frame ("MDF") which is a two-sided frame or on a COSMIC frame, which is single-sided. In many of BellSouth's central offices, the work on the separate frames is performed by two individual technicians, each of whom must pull different work orders. BellSouth's cost study allocates 20 minutes for these work activities. This includes approximately six minutes per jumper on a two-sided frame, three minutes per jumper on a single-sided frame, and five minutes to handle the work orders. Thus, BellSouth's work time is reasonable and should not be reduced.

Q. IN HIS CHART ON PAGE 16, MR. FASSETT'S SUGGESTED INPUT ADJUSTMENTS FOR THE 2-WIRE HDSL-CAPABLE LOOP ARE DIFFERENTIATED BY "NON-DESIGNED" AND "DESIGNED." DOESN'T BELLSOUTH PROVISION ITS ADSL-CAPABLE AND HDSL-CAPABLE LOOPS THROUGH A DESIGNED PROCESS?

A. Yes. As I will discuss later in my testimony, BellSouth does offer a non-designed xDSL-capable loop; however, the specific loop type that Mr. Fassett addresses at this point in his testimony is a designed loop.

BellSouth did not create the design process specifically for xDSL-capable loops. This process is used by BellSouth to provision almost all circuits other than those such as 2-wire analog service level 1 ("SL1") loops that are used for Plain Old Telephone Service ("POTS"). Many of the work groups that are involved in provisioning unbundled xDSL-capable loops also are involved in provisioning BellSouth's other designed circuits for customers such as Interexchange Carriers and retail end-users. As I mentioned above, BellSouth now offers an Unbundled Copper Loop – Non-Designed ("UCL-ND"). BellSouth witness Jerry Latham discusses this loop offering in more detail in his testimony, but my understanding is that the UCL-ND was introduced in response to CLECs' stated requests for a copper loop that did not go through the design process and was, therefore, cheaper than BellSouth's xDSL-capable loop offerings. Given that the UCL-ND is now available to CLECs as a separate offering, I do not understand why Mr. Fassett continues to propose that HDSL-capable loops (and, presumably, ADSL-capable loops) should be provided as non-designed loops. If Mr. Fassett's client wants a non-designed loop, it should order the UCL-ND.

Q. PLEASE EXPLAIN WHY TESTING IS NECESSARY ON xDSL-CAPABLE LOOPS.

A. BellSouth's network has been built to economically support the most common service BellSouth provides - POTS. Although most every copper loop can provide POTS, each copper loop cannot support DSL-based

services. Thus, xDSL-capable loops are a subset of the universe of all copper loops within BellSouth. In order to know the probability that a particular copper loop can support a DSL technology, basic measurements must be made to characterize the loop. For provision of POTS, measurements are made to ensure that the loop has adequate physical attributes such as balance, noise, leakage and foreign voltages. Additionally, for xDSL-capable loops, measurements of loop resistance, capacitance, and attenuation are made to determine the similarity of the measured characteristics to the expected characteristics that were originally calculated during the engineering phase.

Q. PLEASE ADDRESS MR. FASSETT'S CONTENTION ON PAGE 17 THAT NO MORE THAN ONE TECHNICIAN IS REQUIRED TO PERFORM TESTING ON THESE LOOPS.

A. I disagree with Mr. Fassett's contention. One of the most critical tests that must be performed on xDSL-capable loops determines the amount of "loss" on the line. The test set that Mr. Fassett references (3M's model 965 DSP-SA) cannot perform this test on a single-ended basis (i.e., with only one technician). To make a loss measurement, it is necessary to have a "source" at one end of the loop and a detector at the other. While I would agree that this test could be performed by use of the Far End Device ("FED") that Mr. Fassett mentions, such a device must be connected to the loop at the other end by a technician. Obviously, this

would require the involvement of two technicians, and would not support the reduction in work time that Mr. Fassett recommends.

Q. MANY OF THE ADJUSTMENTS THAT MR. FASSETT ADVOCATES BE MADE TO BELLSOUTH'S WORK ACTIVITIES AND TIMES ARE STRONGLY DEPENDENT ON HIS ASSUMPTION THAT A HIGH PERCENTAGE OF CONNECT-THROUGHS EXIST IN BELLSOUTH'S NETWORK. PLEASE DEFINE A CONNECT-THROUGH AND RESPOND TO MR. FASSETT'S CONTENTION.

A. Connect-Throughs ("CTs") are not part of the initial network design. Rather, CTs occur when an existing service is disconnected. For example, assume that an end user has basic residential service into his home, and he moves, so he has the service disconnected. Generally, BellSouth will leave that outside plant connected through from the central office to the premises, under the assumption that someone else will move into the house and request service. As Mr. Fassett says, this practice increases efficiency and reduces the need to dispatch in many cases.

When outside plant is initially constructed, the distribution facilities (the portion of the loop from the Serving Area Interface ("SAI") to the premises) are sized according to an average number of cable pairs per residence or business. The majority of distribution cable is placed along streets and in subdivisions where reinforcement of these facilities would be very expensive and disruptive to existing customers. In my direct testimony, I

discussed the concept of "bridged tap," which is the term used to describe the appearance of cable pairs in more than one location in the distribution plant. Briefly, distribution facilities are sized so that the same cable pairs are accessible in more than one location, which increases the flexibility of the network and increases the likelihood that distribution facilities will be available where and when a customer places an order for service.

The feeder facilities (the portion of the loop from the central office to the SAI), however, are not sized the same as the distribution pairs. As I am certain Mr. Fassett would agree, it is more economical to place a lesser amount of feeder pairs and reinforce the feeder as demand materializes. This mismatch between the number of feeder pairs and the number of distribution pairs means that it is not possible to "pre-connect" or "pre-assign" facilities from the central office to the customer's premises as Mr. Fassett suggests on page 20, lines 18-21. While it is true that a certain number of distribution pairs will be initially dedicated to each residence or business, the feeder pairs are not physically connected through at the SAI until a customer places a request for service. At that time, a technician must be dispatched to the SAI to make the necessary connection between the feeder facilities and the distribution facilities. The inputs in BellSouth's study regarding the probability that a dispatch will be required for various types of service are based on BellSouth's experience in providing these services to CLECs and to its own retail customers.

Q. BEGINNING ON PAGE 18, MR. FASSETT CRITICIZES THE INPUTS TO BELLSOUTH'S NONRECURRING COST STUDY FOR SL1 LOOPS, SL2 LOOPS AND UCL-ND LOOPS. PLEASE BRIEFLY DESCRIBE THESE LOOPS OFFERINGS.

A. The SL1 offering is simply a loop intended to support POTS. Since the SL1 loop is intended for voice band services, it can be provisioned over either loaded or nonloaded copper pairs and it can also be provisioned over Digital Loop Carrier (fiber fed or otherwise). The Service Level 2 ("SL2") offering starts with the SL1 as its base, but also provides test points, coordinated testing and a data layout record. Furthermore, if the only available facilities to serve a particular end user are Integrated Digital Loop Carrier ("IDLC"), then BellSouth will provide an SL2 loop whereas it cannot provide an SL1.

In previous hearings, the CLECs have demanded that BellSouth provide an SL1 provisioned over nonloaded copper facilities with a guarantee that it would not be rolled to fiber. The CLECs stated use for such an offering would be to provide DSL services. The recently developed UCL-ND is BellSouth's response to the CLECs' request.

Q. PLEASE RESPOND TO MR. FASSETT'S CRITICISMS OF BELLSOUTH'S ASSUMED DISPATCH RATES FOR THESE TYPE OF LOOPS.

A. BellSouth assumed a 38% dispatch rate on the SL1 and UCL-ND loops, and I consider that to be a conservative number in that it is based on the dispatch rate for orders from both the residential and small business market, with the majority of the orders being for residential service. Because the residential market is fairly predictable and stable, residential orders require fewer dispatches than the more volatile business market. The vast majority of CLEC orders, however, have been for loops to serve business customers. Therefore, my opinion is that, if anything, the 38% dispatch rate is understated. Mr. Fassett's recommendation that a 5% dispatch rate be used for these offerings is entirely unreasonable and unsupported.

Mr. Fassett states at line 17 that "[o]utside plant networks are designed to minimize the need to dispatch technicians to the field." I agree that BellSouth seeks to minimize field dispatches. The primary goal of the outside plant network design, however, is to provide an economical means of providing service upon request, where it is requested and as quickly as possible. I earlier explained that outside plant is designed so that there is an SAI between the feeder facilities and the distribution facilities. The distribution plant is sized initially for near ultimate need, and the feeder facilities can be augmented as demand dictates. This efficient network design results in the need for a technician to make a cross-connection between a feeder pair and a distribution pair at some point in time. When this facility is no longer needed to provide a service, if this cross-connection is left in place, then the facility becomes a CT, and a future

dispatch may be eliminated on certain types of orders to the same premises. It is not possible, however, to provision all orders via CTs, which is the end result of Mr. Fassett's recommendation.

Regarding the SL2 offering, as I stated, it is a designed loop. Each of BellSouth's designed loop offerings include a test point and coordinated testing, thereby requiring a dispatch. This gives the CLEC's technician the opportunity to make an end-to-end test upon completion of the order. CLECs often order the SL2 loop rather than the SL1 loop, presumably because of the improvement in trouble isolation due to the SL2 loop having test points. Also, as I stated above, an SL2 loop is required if the end user is served by IDLC.

Q. PLEASE RESPOND TO MR. STARKEY'S REPRESENTATION ON PAGE 5 OF BELLSOUTH'S PROPOSED RATE ELEMENT A.19 AS BEING "ROUTINE MAINTENANCE" THAT BELLSOUTH IS ALREADY RECOVERING FROM THE CLEC IN THE RECURRING MONTHLY LOOP RATE.

A. Mr. Starkey is incorrect. Rate element A.19 provides for joint acceptance testing for the loop. As I mentioned earlier, BellSouth now offers a UCL-ND. The cost development for this loop offering assumes that an outside technician will be dispatched only when work activity is required to achieve connectivity from the main distributing frame to the customer's network interface device ("NID"). Because there may be other times when a CLEC

might request that our technician be dispatched to the NID, BellSouth developed this rate element. The BellSouth technician will perform any reasonable test activities within his capability that the CLEC's technician requests. This rate element is optional and only applies if requested by the CLEC.

Q. DO YOU HAVE ADDITIONAL COMMENTS ON MR. FASSETT'S CHART FOUND ON PAGE 23 OF HIS TESTIMONY?

A. As he did with BellSouth's xDSL-capable loop offerings, Mr. Fassett proposes significant reductions to BellSouth's work times and fallout rates without providing any justification for these changes.

Q. BEGINNING ON PAGE 24, MR. FASSETT PROVIDES HIS CRITICISMS OF BELLSOUTH'S NONRECURRING COST STUDY FOR PROVISIONING HIGH CAPACITY LOOPS. PLEASE RESPOND.

A. Mr. Fassett contends that "[l]ike other types of service orders, DS1 orders should flow through the electronic databases, minimizing the need for manual intervention." Apparently, he assumes that BellSouth has built DS1s (or higher capacity loops) into any location where a CLEC might wish to serve an end user with high capacity loops or where a CLEC might order a local channel to a Point of Interface ("POI"). BellSouth does not have a crystal ball by which it predicts where DS1s and DS3s will be ordered.

Mr. Fassett must also be aware of the difficulty and expense of acquiring Common Language Location Identifier ("CLLI") codes, because on page 24, line 22 where he acknowledges that a location might not have a CLLI code, he quickly counters that most building locations where a DS1 or a DS3 would be provisioned would have an existing CLLI code. He gives no explanation as to his supposition that DS1s and DS3s are ordered into buildings that have CLLI codes. CLLI codes are unique to a location, but a location may often have many CLLI codes for various customers. Apparently, he needs to make this assumption in order to further assume, as he does on page 25, lines 3, that the digital facilities into such buildings will always be inventoried in the TIRKS database. With his sequence of faulty assumptions, Mr. Fassett artificially minimizes the effort needed to provision such facilities.

Mr. Fassett has simply assumed, without any consideration for capital investment, the ideal network configuration (from a CLEC's perspective) for provisioning DS1 and DS3 facilities. He has made no allowance for the details of provisioning these circuits. A DS3 uses coaxial cable from the BellSouth multiplexer to the interface. The distance from the multiplexer to the interface is limited. Even if BellSouth has a fiber multiplexer with spare capacity installed in the basement of a multi-story building, someone has to make a determination that a path for the coaxial cable is available and the interface is reachable. Mr. Fassett does not even allow engineering enough travel time to make a site visit. He

apparently assumes that DS1 and DS3 facilities are as common throughout the network as POTS facilities. Although BellSouth's network is evolving to where there are a greater number of digital facilities in the distribution network, this evolution is certainly not occurring at the pace represented by Mr. Fassett's adjustments.

Q. DOES MR. FASSETT CONTINUE HIS PRACTICE OF ARBITRARILY SLASHING BELLSOUTH'S WORK TIMES AND FALLOUT RATES IN HIS DISCUSSION OF BELLSOUTH'S ISDN/UDC LOOP OFFERINGS?

A. Yes. Just as with the earlier loop offerings that I discussed, Mr. Fassett offers no support for his recommendations, other than to say they are "reasonable." Mr. Fassett oversimplifies the activities required to provision ISDN and UDL loops. His criticism is based on the general assumption he makes on page 32 that "[a]ssigning these facilities should be no differrent than other facilities...." Even in a forward-looking network using Next Generation Digital Loop Carrier ("NGDLC"), because ISDN/UDC loops requires 3 DSOs, the availability of compatible facilities is different from that of POTS.

Mr. Fassett's criticism of the work times for both the technician in the UNEC and the SSI&M technician fails to recognize that an ISDN/UDC loop is, in reality, a data service, and the determination of compliance with strict standards is more time consuming than the time required to provision POTS. To suggest that the UNEC needs only 5 minutes is

ridiculous. A Bit Error Rate Test ("BERT"), which is often needed when a ISDN/UDC loop is provisioned over DLC, requires at least 5 minutes of actual run time, in addition to the time required to prepare for the test. Mr. Fassett allows 30 minutes for the SSI&M technician, which is only 5 minutes more than he allows to provision an xDSL-capable loop which will always be a metallic pair. Mr. Fassett's lack of attention to these types of details results in artificially low work times.

Q. BOTH MR. STARKEY AND MR. FASSETT ARE CRITICAL OF BELLSOUTH'S POSITION AND STUDY ASSUMPTIONS REGARDING LOOP MODIFICATION. BEFORE ADDRESSING THEIR SPECIFIC CONCERNS, PLEASE EXPLAIN WHEN AND WHY LOOP MODIFICATION MIGHT BE REQUIRED.

A. Loop modification, also known as loop or line conditioning, is the process by which a copper loop that currently cannot support DSL service is modified or conditioned to support such service. As I explained in my direct testimony, the presence of load coils on a copper loop renders that loop unusable for DSL service. The effect of bridged tap on a DSL service is very much dependent on the length and/or location of the bridged tap, the technology/equipment used and the particularly transmission speed of the service being provided. In its First Report and Order in CC Docket No. 98-147, dated March 31, 1999, the FCC noted that, in order to provision xDSL service, the loop "must be free of excessive bridged taps, loading coils and other devices commonly used to aid in the provision of analog

voice and data transmission, but which interfere with the provision of xDSL services." (footnote 10 to ¶10).

Load coils are not always present on the copper loops in BellSouth's network. If present, though, and if no other unloaded copper loop is available to the customer's location, the only way to provide DSL service over the loop is to unload it. Similarly, if the loop does have bridged tap and the CLEC believes it will impair the service they want to offer to an end user, then the CLEC may request BellSouth to remove the bridged tap. BellSouth's Unbundled Loop Modification (ULM) offering sets forth the costs that BellSouth expects to incur when it is requested to condition a copper loop.

Rebuttal Exhibit WHBG-1 attached to my testimony provides an illustration of outside plant facilities with load coils. This exhibit also contains references to various FCC Orders that address: (1) the FCC's recognition that load coils may exist on loops less than 18,000 feet in length; (2) the FCC's directive that ILECs must remove load coils if requested to do so by CLECs and (3) the FCC's determination that ILECs can charge CLECs for this loop modification.

Q. PLEASE ADDRESS MR. FASSETT'S CONTENTION ON PAGE 37 THAT, BECAUSE COPPER LOOPS UNDER 18,000 FEET SHOULD NOT HAVE LOAD COILS, BELLSOUTH SHOULD NOT BE ALLOWED

TO CHARGE A CLEC FOR REMOVAL OF EXISTING LOAD COILS ON THESE LOOPS.

A. First, I will agree with Mr. Fassett's representation that a forward-looking network would not have load coils on copper loops less than 18,000 feet in length. In fact, in a forward-looking network, there will be no copper loops greater in length than 12,000 feet. BellSouth does not actively place load coils on these loops. Let me explain, however, several reasons why many of the existing copper loops in BellSouth's network that are within 18,000 feet of the central office do have load coils present.

Before digital loop carrier was introduced into the outside plant in the 1980s, all customers were served over copper loops, and many of these loops reached distances well in excess of 18,000 feet from the serving central office. In order to provide voice transmission that would be acceptable to customers, load coils were required to be placed on these longer loops. As Mr. Fassett discusses in his testimony at page 48, when load coils are deployed, the first load point is 3,000 feet from the central office, and each load point thereafter occurs at 6,000-foot increments. A minimum of two load points is required.

When digital loop carrier was introduced into the outside plant network design, the primary use was to serve customers located more than 18,000 feet from the central office. This design provided the most economical use of BellSouth's existing plant, and was the most efficient way to reinforce

facilities that were exhausting. In other words, if digital loop carrier were implemented to serve customers located long distances from the central office, then the copper plant that previously served these customers could be "freed up" to serve growth closer to the central office.

Of course, these copper pairs have load coils on them, because the load coils were necessary when those cable pairs were previously used to serve customers located more than 18,000 feet from the central office. If the load coils do not adversely affect voice transmission, then BellSouth does not actively remove the load coils. It is generally never a good idea to make rearrangements in cable plant unless such action is necessary to repair a service or to improve the transmission of a service, because such activity is prone to create additional problems.

A second reason for loops less than 18,000 feet to be loaded is the one Mr. Fassett gives himself on page 39 concerning analog PBX trunks. Although many PBXs today use a T1 pipe for connectivity to BellSouth's network, existing PBX trunks provided over copper plant may have had load coils place on them for proper transmission.

A third reason that loops less than 18,000 feet may be loaded is due to the economics of when the cables were placed. If all the pairs were known to potentially only feed distribution areas of loops greater than 12,000 feet in total length including bridged tap, then it was advisable to load all the pairs to provide maximum flexibility for relief and growth.

When a CLEC requests that one of these loops be provided as an xDSL-capable loop, it becomes necessary to remove the load coils because, as I have explained, DSL service simply will not work on loaded cable pairs. Mr. Fassett's argument that BellSouth should not be allowed to charge the CLEC for loop conditioning on loops under 18,000 feet is completely without merit. In its UNE Remand Order dated November 5, 1999, the FCC addressed this argument, stating that:

> [w]e agree that networks built today normally should not require voice-transmission enhancing devices on loops of 18,000 feet or shorter. Nevertheless, the devices are sometimes present on such loops, and the incumbent LEC may incur costs in removing them. Thus, under our rules, the incumbent should be able to charge for conditioning such loops.

(Order at ¶193, footnotes omitted).

It is clear that the FCC recognizes that load coils exist on loops shorter than 18,000 feet, that BellSouth incurs costs to remove them when requested to do so and that the CLEC should pay for the loop conditioning. Mr. Fassett and Mr. Starkey contend that, if BellSouth had complied with Outside Plant Design guidelines over the years, BellSouth's network would be free of load coils and bridged taps. Obviously, the FCC does not share Mr. Fassett's belief. As I have explained, as a general practice, BellSouth no longer places load coils on loops under 18,000 feet. That practice, however, has no effect on the fact that load coils are often present on those loops, due to the evolution of the outside plant network.

Additionally, I disagree with Mr. Fassett's contention that "the use of bridged tap is inconsistent with modern engineering guidelines which have been in use since 1972." (page 35). The use of limited bridged tap remains a viable way to build flexibility into the distribution network. In any event, bridged tap does not always have to be removed in order to provide DSL service over a loop. If, however, the particular loop that the CLEC requests has bridged tap on it that the CLEC wishes to have removed, then the CLEC should be required to pay BellSouth for the cost BellSouth incurs to condition the loop.

The only issue left to debate is whether the assumptions that BellSouth used in its loop modification cost study are reasonable. I maintain that they are.

Q. PLEASE REITERATE THE SPECIFIC ASSUMPTIONS THAT UNDERLIE BELLSOUTH'S LOOP CONDITIONING COST STUDY AS IT RELATES TO REMOVAL OF LOAD COILS.

A. In order to develop costs for removing load coils, BellSouth assumed the following:

- For loops less than 18,000 feet in length, 90% of the time there will be 2 load points, and 10% of the time there will be 3 load points (average of 2.1 load coils);
- For loops less than 18,000 feet in length, an average of 10 pairs will be unloaded at a time;

- For loops over 18,000 feet in length, 90% of the time there will be 3 load points, 5% of the time there will be 4 load points, and 5% of the time there will be 5 load points (average of 3.15 load coils);
- For loops over 18,000 feet in length, 2 pairs will be unloaded, unless more are ordered by the requesting carrier; and
- For any loaded copper loop, the first two load points will be in the underground 90% of the time; otherwise, the load points will be on aerial or buried plant.

Q. ON PAGE 26, MR. STARKEY SUGGESTS THAT THIS COMMISSION SHOULD RELY UPON INFORMATION FROM A STUDY THAT SPRINT PERFORMED IN NORTH CAROLINA AND TENNESSEE AND ON MR. FASSETT'S RECOMMENDATIONS REGARDING THE PROBABILITY OF LOAD COIL REMOVAL OCCURRING IN THE UNDERGROUND VERSUS IN BURIED OR AERIAL PLANT. PLEASE COMMENT.

A. First, I would not recommend that this Commission assume that the characteristics of one ILEC's network bears any significant resemblance to another ILEC's network. I certainly would not recommend that information regarding Sprint's network in North Carolina or Tennessee be used to form assumptions about BellSouth's network in South Carolina. BellSouth's network can vary substantially from state to state and from district to district within a given state, depending on the demographics and

the terrain. To-date, CLECs have elected to collocate in BellSouth's central offices in the urban and suburban areas; therefore, these are the areas where CLECs are requesting xDSL-capable loops. In the event that these loops need to be conditioned to support DSL services, the likelihood is increased that the load points will be in the underground.

I am not familiar with the Sprint territory in North Carolina, but I am familiar with Sprint's territory in East Tennessee that has some metropolitan area but also includes a substantial amount of rural area. As with any study, one would have to know the assumptions behind the Sprint study to know its validity to the issue at hand. If Sprint equally weighted all loops (i.e., loops in the metropolitan areas as well as loops in the rural areas), then one would expect the results to be reflective of a more rural telephone network.

Regarding Mr. Fassett's recommendations, his telephony experience was gained in the Adirondack District of New York, which consisted of 43 wire centers with a total customer base of less than 200,000 lines (i.e., less than 5,000 lines per wire center). The characteristics of outside plant in the Adirondack District of New York are simply not useful as a surrogate for BellSouth's serving area any more than would be Sprint's network in North Carolina or Tennessee.

In metropolitan wire centers, the outside plant is predominantly built underground in the area closest to the central office. The vast majority of

BellSouth's central offices serving metropolitan areas have underground structures (conduits, etc.) for the placement of large underground cables and associated load coils. Even the smaller, more rural central offices have underground facilities leaving the central office. Because the majority of requests for loops capable of providing DSL service have come from metropolitan areas, most of the work involved with conditioning loops is expected to be in metropolitan settings and, therefore, will involve predominantly underground facilities.

Q. PLEASE ADDRESS THE ADJUSTMENTS THAT MR. STARKEY AND MR. FASSETT RECOMMEND BE MADE TO BELLSOUTH'S LOOP CONDITIONING ASSUMPTIONS.

A. Mr. Starkey contends at page 24 that removal of load coils will occur in the underground no more than 60% of the time. It appears that his contention is based, in part, on the Sprint cost study I earlier discussed. At page 48, Mr. Fassett recommends assuming that, on average, 1.5 load coil locations will be in the underground. Again, BellSouth's assumption is that, for loops less than 18,000 feet, there will be 2.1 load points, and those load points will be in the underground 90% of the time. Therefore, BellSouth's study assumes that 1.9 load coils will be in the underground, as compared to Mr. Fassett's recommended 1.5. Of course, Mr. Fassett points out that his recommended modifications only apply to loops greater than 18,000 feet because he maintains that BellSouth should not receive any compensation for unloading loops less than 18,000 feet in length.

Q. PLEASE RESPOND TO MR. STARKEY'S AND MR. FASSETT'S CONTENTION THAT, ON AVERAGE, 50 PAIRS SHOULD BE UNLOADED AT A TIME.

A. There are numerous reasons why unloading large complements of pairs is neither reasonable nor efficient. The most compelling reason is that the churn in outside plant facilities has spread working loop feeder pairs throughout the entire complement of available pairs. In other words, there are few loop feeder cable pair counts (01 to 50 or 51 to 100, for example) that are all spare and that can have load coils removed from all pairs at one time without affecting existing service. Mr. Starkey contends at page 24 that BellSouth's fill factor assumptions used in its loop costs study cannot be squared with an assumption that, on average, only 10 pairs will be unloaded at a time. BellSouth does not dispute that it has spare pairs available throughout its network, as evidenced by its fill factor assumptions. These spare pairs, however, cannot be assumed to exist in neat 50-pair groups because, generally, they do not. The fill factors are discussed further by BellSouth witness Daonne Caldwell.

In the absence of spare cable counts, it is inappropriate to assume that working cable pairs can always be unloaded. BellSouth has provisioned many special services over designed loops. The design process specifically accounts for the fact that the loop has load coils in order to meet transmission requirements. Simply removing these load coils will

result in poor customer service unless the loop is redesigned and re-engineered to account for the lack of load coils, or unless the end user's service is moved to another similarly loaded loop. In some cases, the end user would perceive a reduction in the quality of service after the load coils are removed. In other cases, such as with analog data services, the loop with its load coils removed would not function at all until the loop is redesigned and re-engineered or until the service is moved to a similarly loaded loop.

Generally, in order to achieve the removal of all load coils for an entire complement of cable counts, existing working service would have to be moved to similarly loaded loops before the load coil removal work could commence. These moves to similarly loaded loops would require dispatches of technicians to re-run jumpers in the BellSouth central office and also at the SAI in the field, which would entail considerable expense. Also, obtaining a release from the end user on what the customer would consider to be a critical circuit (analog data, or off-premise station for example) would incur even more time and effort as well as customer inconvenience.

BellSouth's loop plant must accommodate both POTS services and special services, including digital services. At any given SAI, there are only three possible loop provisioning scenarios: (1) all loops are served entirely over copper; (2) all loops are served by Digital Loop Carrier (DLC); or (3) some loops are served by the first method (copper) while the

remaining loops are served by the second method (DLC). All loop feeder pairs in a given SAI must be capable of serving any loop distribution pair in that SAI. As such, the feeder pairs must be uniform. If the design of the distribution area requires loaded pairs (that is, the longest loop served by that SAI will be longer than 18Kft), then the entire feeder complement will be loaded.

Sometimes a small complement of unloaded facilities is available in the SAI. In that instance, some pairs in the SAI were specifically unloaded for the express purpose of putting digital services on them. Not all of BellSouth's SAIs have this situation where both loaded and nonloaded pairs are present. Generally, BellSouth only provisions these unloaded pairs if there is a demand for digital services such as DS1 or ISDN in the area served by that SAI. Prior to the advent of DSL services, there was very little demand for digital services in residential areas. Therefore, most SAIs serving such areas do not have both loaded and unloaded pair complements. In the case of ISDN, where the serving SAI has both copper loops and loops served via DLC, the ISDN service is normally provisioned via DLC, and the loops are not unloaded.

BellSouth has not stated that it will never unload 50 or 25 pairs at one time. BellSouth's assumption is that, on average, 10 pairs will be unloaded on loops under 18,000 feet, which means that sometimes more than 10 loops will be unloaded, and other times less than 10 loops will be unloaded. When BellSouth receives a request to unload a loop, the

outside plant engineer reviews the cable records and determines, based on his knowledge of the area, the most reasonable number of pairs to unload on that job. If there are one or two spare complements of 25 pairs available, and the engineer determines that there is a likely demand for that quantity of unloaded cable pairs in that area, he will issue a job to unload 25 (or even 50) pairs. Such a scenario, however, is not expected to be the norm.

When there is not a spare complement available to unload, the engineer must balance a decision to unload working pairs against a decision to only unload a few pairs on that particular order. Again, in metropolitan areas there are many special service circuits that have been designed to operate specifically on loaded pairs. There may be equipment in the central office and at the customer's premises that has been adjusted to interact with loaded pairs. If unloaded, these circuits would provide poor service (in the case of a PBX trunk with an amplifier in the Central Office) or no service at all (in the case of an analog data circuit). Thus, the engineer must decide what is the least intrusive means of completing a service order request.

Q. PLEASE ADDRESS MR. FASSETT'S SUGGESTION AT PAGES 38-39 THAT UNLOADING 50 PAIRS PER VISIT WOULD MINIMIZE NEGATIVE IMPACTS ON THE NETWROK.

A. I agree with Mr. Fassett's characterization that each time a splice case is opened, wear and tear results. I do not agree, however, that this is a

compelling reason to unload 50 pairs at a time. Indeed, Mr. Fassett's argument could also be used as the reason for unloading a minimum number of pairs. Much of BellSouth's underground copper plant is pulp cable, and the older this cable is, the more fragile it is. It is very difficult to work in a cable splice without inadvertently causing troubles on working cable pairs. The fewer pairs that are touched, the less likelihood there is that damage will occur. The counts of the pairs in these cables are not easily determined. It is likely to be economical to find the one pair that needs to be unloaded rather than trying to determine a 50-pair count, in the process handling many pairs and almost surely causing troubles on some of them. A single trouble report caused by handling a pair will negate any efficiencies thought to be gained by unloading a large number of pairs.

Q. DO THE WORK TIMES THAT MR. FASSETT RECOMMENDS FOR UNLOADING CABLE PAIRS IN THE UNDERGROUND APPEAR TO CONSIDER THE EXISTENCE OF PULP CABLE?

A. No. The suggested work times in Mr. Fassett's table on page 49 appear to assume that plastic insulated conductor ("PIC") cable with modular connectors is always being unloaded. Mr. Fassett shows only 5 minutes for Step 6 (Identify pairs to be deloaded for 1st 25-pair binder group). As I explained above, there is still a lot of pulp cable in BellSouth's underground plant. Pulp cable was first spliced with individual splice "buttons," and later with modular connectors. Pulp cable was

manufactured in 100-pair binder groups, and the individual pairs were not color-coded. Therefore, when sections of pulp cable were spliced together, any one pair out of a 100-pair binder group in one section of cable would have been spliced to any one pair of the corresponding binder group in another section of cable. Random splicing, as this was termed, makes it impossible to simply disconnect a modular splice connector to effect only sequential pairs.

When a job is issued to remove a device from a loop that consists of pulp cable, it is necessary to identify each pair that is to be conditioned. The most certain means to identify a pair requires that a tone first be applied to the pair at the main distributing frame since this is the only place the pair's identity is most accurately determined. This requires additional work activity in the central office, and more time on the part of the splicer to search through the whole binder group again and again as each pair is identified. To be absolutely sure of identifying both the tip and the ring of the pair, a short or ground may be applied and removed. Thus, in a pulp cable, to unload 50 pairs requires more work activity than the simple unplugging and reconnecting of modules.

Q. ON PAGES 49 THROUGH 51 OF HIS TESTIMONY, MR. FASSETT PROIVIDES HIS RECOMMENDED WORK ACTIVITIES AND TIMES FOR REMOVING LOAD COILS. ARE THESE ACTIVITIES AND TIMES REASONABLE?

A. No, they are not. While Mr. Fassett criticizes BellSouth's times for unloading cable pairs as being unreasonable, the times he proposes are simply unrealistic. He has listed many of the tasks involved in removing load coils, but the times he proposes for each task are certainly not "readily achievable" as he contends on page 52. Indeed, his proposed work times appear to be the minimum amount of time in which the task could be performed, assuming a perfect environment. For this type of work, a perfect environment does not exist.

Further, Mr. Fassett's suggested work times depend on specific caveats that will not usually be the case. He assumes PIC cable in the underground environment and, based on that assumption, further assumes a perfectly spliced cable with no errors in the numerous splices from the central office to the splice in which loop conditioning is being performed. Looking at his suggested work times in the buried environment, he has assumed that the splice is readily accessible in a pedestal (as stated in the title of the table on page 51) rather than being in a buried splice enclosure. Granted, there are times when BellSouth has used ready access terminals in which to enclose its splices, but experience has shown that in some areas it is not the most economical method in the long run. When the splice is, in fact, buried, additional cost and time is needed to perform the job. BellSouth's work times appropriately take this possibility into account.

During the hearing, I will demonstrate for this Commission the steps that

are typically involved in unloading cable pairs. Through this demonstration, I will show that Mr. Fassett's suggested work times are not reasonable and should not be adopted by this Commission for use in BellSouth's cost study.

Q. PLEASE RESPOND TO MR. McDANIEL'S RECOMMENDATION TO THIS COMMISSION THAT IT TAKE NOTICE OF THE FLORIDA COMMISSION'S RECENT GENERIC UNE ORDER, SPECIFICALLY AS IT RELATES TO NONRECURRING WORK TIMES.

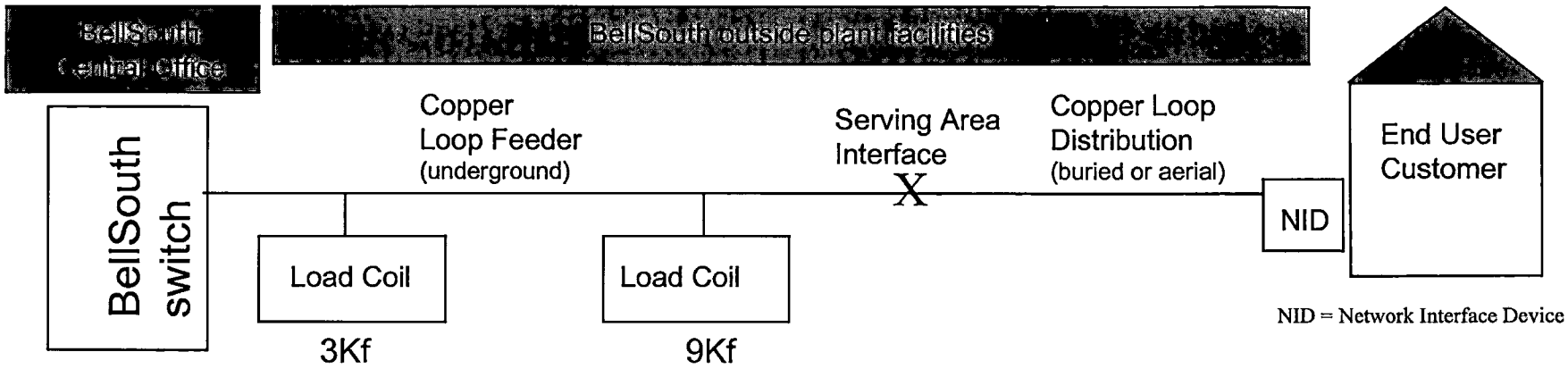
A. While I would expect that this Commission would be interested in recent orders from other states regarding the same issues being addressed here, I am certain that this Commission will reach its findings based on the evidence before it at the conclusion of the case. In addition, it is my understanding that the Florida UNE Order is not yet a final, non-appealable order. Most importantly, as I explained in my testimony, Mr. Fassett has not provided this Commission with any rational explanation as to why his work times should be adopted in place of those used by BellSouth in its cost study.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

PC DOCS 391721

ILLUSTRATION OF LOAD COILS ON CABLE PLANT



In its Advanced Services First Report and Order released March 31, 1999, the FCC noted that:

•In order to deploy xDSL service, the loop must be free of excessive bridged taps, loading coils and other devices commonly used to aid in the provision of analog voice and data transmission, but which interfere with the provision of xDSL service. (Footnote 10 to ¶10)

•"Conditioning" loops to remove these impediments can be expensive. (Footnote 10 to ¶10)

In its UNE Remand Order released November 5, 1999, the FCC noted that:

•While some "flavors" of xDSL can be provided over loops with a limited number of impediments [i.e., bridged tap], as a general rule the quality of such service – particularly the speed – is significantly diminished, compared to the service provided over unencumbered wires. (¶190)

•The incumbent will, in some instances, be required to take affirmative steps to enable requesting carriers to provide services that the incumbent does not currently provide. By "affirmative steps," the FCC is referring to loop conditioning. (¶191)

•While noting that networks built today normally should not require voice-transmission enhancing devices on loops of 18Kf or shorter, the FCC further noted that such devices are sometimes present on existing loop plant and that the incumbent may incur costs in removing these devices. The FCC determined that "under our rules, the incumbent should be able to charge for conditioning such loops." (¶193)

STATE OF SOUTH CAROLINA)
) CERTIFICATE OF SERVICE
COUNTY OF RICHLAND)

The undersigned, Susan Davis Gibson, hereby certifies that she is employed by the Legal Department for BellSouth Telecommunications, Inc. ("BellSouth") and that she has caused the Rebuttal Testimony of William H. P. Greer to be served by placing such in the care and custody of the United States Postal Service, with first-class postage affixed thereto and addressed to the following this June 11, 2001:

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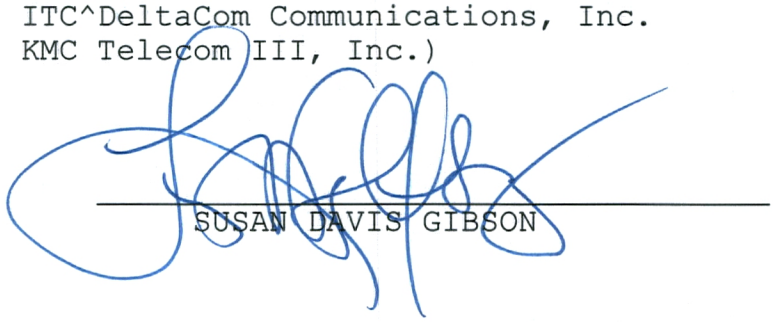

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